ABSTRACT

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Title of the thesis: Azaphthalocyanines substituted with one aminogroup – influence of aromatic substituents on intramolecular charge transfer.

Diploma thesis

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Study programme: Pharmacy

The goal of my diploma thesis was to develop new unsymmetrical azaphthalocyanines where one of peripheral substituents was attached through nitrogen. The substituent on nitrogen was intended to be an aromatic ring or nitrogen was part of a heterocycle. Theoretical part describes fluorescence and possibilities of its quenching. Methodology section describes methods of preparation of unsymmetrical phthalocyanines and azaphthalocyanines (AzaPc), both statistical condensation and selective approaches. Experimental section describes synthesis of precursors and their cyclotetramerization reaction. Precursors were prepared using nucleophilic substitution of chlorine in the 5-chloro-6-phenylpyrazine-2,3-dicarbonitrile and contained substituent bound *via* nitrogen, which was part of aromatic imide (5-(1,3-dioxoisoindolin-2-yl)-6-phenylpyrazine-2,3-dicarbonitrile) or was substituted by phenyl (5-phenyl-6-(phenylamino)pyrazine-2,3-dicarbonitrile). These precursors were subjected to cyclotetramerization with 5,6-bis(*tert*-butylsulfanyl)pyrazine-2,3-dicarbonitrile. Experiment was successful only with the latter precursor andAzaPc substituted with one phenylamino substituentwas isolated. After isolation of the AAAB type congener (2-phenylamino-3-phenyl-9,10,16,17,23,24-hexakis(*tert*-butylsulfanyl)-1,4,8,11,15,18,22,25-octaazaphthalocyanine) the magnesium and zinc complexes were also prepared. Prepared derivatives will be used to study the influence of ICT on AzaPc properties depending on the character of substituent on the nitrogen donor atom.